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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/593,063

04/28/2008

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EXAMINER

A, PHI DIEU TRAN

ART UNIT

PAPER NUMBER

3633

MAIL DATE

DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/593,063

Applicant(s)

IONS ET AL.

Examiner

PHI D. A

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 15 September 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 24-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 24-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No.(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No.(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

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***Claim Rejections - 35 USC § 103***

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 24-26, 29-46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Celada et al (3467368) in view of Moffa et al (4089139) and Persson (4896865).

Celada et al shows a direct smelting plant site a smelting unit comprising a direct smelting vessel, the vessel circumferential being made of steel plate (18).

Celada et al does not show the step of prefabricating away from a predetermined location of the plant site for the direct smelting vessel, a base module and one or more further vessel modules to be brought together to form the vessel, each module comprising a circumferential vessel wall section formed of steel plate, transporting the prefabricated vessel modules to the predetermined location and depositing sequentially the base module and the one or more further vessel modules on top of one another and joining them together by one or more circumferential welds between successive circumferential wall sections of the modules to form a unitary direct smelting vessel.

Moffa et al shows modular members formed to stack one on top of each other to form a large hollow enclosure, top module (3) to be connected to intermediate module (27), the intermediate module (2) to be connected to base module (26).

Person discloses the use of welding (6) to connect contacting structures together.

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It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Celada et al's structures to show modular members formed to stack one on top of each other to form a large hollow enclosure as taught by Moffa et al in order to enable fast and easy fabrication of smaller modules to be assembled at site since manufacturing the hollow enclosure as one piece would be cumbersome and costly, and having welding connecting the structures together would enhance the fastening together of contacting members at seams as taught by Person.

Celada et al as modified shows all the claimed structural limitations. The claimed method steps would have been the obvious method steps of constructing and installing Celada's modified structures.

Per claim 25, Celada et al as modified further shows the weld is a continuous horizontal weld made on site after the modules to be connected have been deposited on top of one another.

Per claim 26, Celada et al as modified further shows modules include an intermediate module and an upper module, the intermediate module being deposited onto the base module and connected to an upper part of the base module and the upper module being deposited on and connected to an upper part of the intermediate module.

Per claims 29-46, Celada as modified further shows the base module includes a hearth and a forehearth for discharging molten metal, wherein the hearth and forehearth are lined with refractory bricks after installation at the smelting plant site, the intermediate vessel module comprises a generally cylindrical barrel section provided with a tap hole for discharging molten slag, wherein the upper vessel module is provided with an outlet for off gases, wherein at least one of the further modules is prefabricated so as to be internally lined with water cooling panels

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connected to water inlet and outlet connectors on the exterior of the circumferential wall section of that module, wherein the intermediate module and the upper module are both prefabricated so as to be internally lined with water cooling panels connected to water inlet and outlet connectors on the exterior of the circumferential wall sections of those modules, wherein the base module is also prefabricated so as to be partially internally lined with water panels connected to respective water inlet and outlet connectors on the exterior of the circumferential wall section of the base module, which also comprises the steps of prefabricating away from said predetermined location a plurality of tower modules to be brought together to form a vessel access tower, transporting the prefabricated tower modules to the predetermined location and depositing them sequentially on top of another and joining them together to form the tower, wherein the tower modules are formed such that the tower extends about the vessel at the completion of installation of the vessel and the tower, wherein at least one pair of the tower modules is connected together at the same level as the connection between a pair of the vessel modules, wherein at least some of the tower modules are installed before the vessel modules about which they are to extend are installed, the latter vessel modules being deposited downwardly into the interior of the installed tower modules, which also comprises the steps of pre-fabricating off-gas ducting and treatment modules to be brought together to form off- gas ducting and treatment apparatus, transporting to site said off-gas ducting and treatment modules and installing them in a predetermined order to provide a continuous gas tight connection between an outlet of the upper module and the off-gas ducting and treatment apparatus, wherein at least one module comprises a wet scrubber with substantially vertical orientation and having an outlet disposed to receive a substantially vertical section of off-gas ducting, wherein said outlet of said upper module is disposed within a

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substantially vertical plane and connects with an off-gas ducting module disposed at an angle to a horizontal axis of between zero and fifteen degrees, wherein said upper module is connected with said off-gas ducting module prior to installation whereby both said modules are installed onto said intermediate module as a single module, wherein said off-gas ducting module has an outlet remote from said upper module and disposed to receive a further off-gas ducting module extending vertically upwardly, wherein said off-gas duct comprises an off-gas ducting module arranged with a substantially inverted U-shape, each leg of said substantially inverted U-shape having an outlet for connection with a vertically extending off-gas ducting module, wherein one of said outlets of said vertically extending off-gas ducting modules comprises an outlet of said wet scrubber.

3. Claims 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Celada et al (3467368) in view of Moffa et al (4089139) and Persson (4896865).

Celada et al as modified shows all the claimed limitations except for a concrete foundation pad is pre-formed at the predetermined location to receive the base module, wherein a series of load bearing members are located intermediate an external bottom surface of the base module and an upper surface of the concrete foundation pad to thereby enable air to flow between the base module and the foundation pad.

It would have been obvious to one having ordinary skill in the art at the time of the invention to modify Celada et al's modified structures to show a concrete foundation pad is pre-formed at the predetermined location to receive the base module since having a concrete foundation would ensure the support and stability of the plant when installed.

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Per claim 28, Celada et al as modified further shows a series of load bearing members are located intermediate an external bottom surface of the base module and an upper surface of the concrete foundation pad to thereby enable air to flow between the base module and the foundation pad.

### *Conclusion*

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. The prior art shows different smelting plant designs.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Phi D A whose telephone number is 571-272-6864. The examiner can normally be reached on Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Glessner can be reached on 571-272-6754. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Phi D A/  
Primary Examiner, Art Unit 3633

Phi Dieu Tran A

4/25/2011